To: Mike Watson, Assistant Chief, U.F.A.

From: Clint S. Mecham, Captain, Safety Officer, U.F.A.

Date: 17 August, 2006

Subject: Post Incident Analysis of Incident Number 06D011246 (Little Cottonwood Park Fire)

Sir, as per my assignment please find below the first report of the post incident analysis of the Cottonwood Heights gully fire of 14 July, 2006. The emphasis of this post incident analysis was to be placed on the first thirty to forty-five minutes of the incident. Special attention has been placed on response time, structure protection, and tactical considerations.

General Impressions

Upon listening to the initial 911 calls to the Valley Emergency Communications Center (V.E.C.C.) there is nothing striking or unusual about the reports of a field fire in the gully to the south of Parkridge Drive. As a result of the information that was feeding into V.E.C.C., a standard single engine response was assigned as per V.E.C.C. protocol. The information that was being presented to V.E.C.C. was that there was a field fire with smoke and flames, but that there were no structures or vehicles threatened by the fire.

The approaching single engine (E110) made access through Crestwood Park to the south of the actual seat of the fire. As E110 approached the north end of the Crestwood Park parking lot they were confronted by a secured gate barring access to the fire. E110 initially tried to use a combination lock code to open the gate. These efforts were confounded by an inoperative lock. As a result the chain securing the gate was cut and access made to the fire. Once again, the arriving crew felt that this particular interface fire could be handled in a standard fast attack method.

The incident became more complicated by the changing wind and weather conditions. The fuel load in this particular area was especially heavy with light fuels primarily dried grasses with a scattering of small Russian Olive and Scrub Oak trees.

The officer in command of the scene realized after arrival that additional resources would be required. As a result, an additional engine and auxiliary were requested within two minutes of the arrival of E110. At this point, all responding units were assigned to respond to the Crestwood Park area. Once the fire started its run to the north and west command (E110) requested additional resources including an additional engine, a truck company, and a water tender. These additional resources were assigned to respond to the Parkridge Drive area to protect the residential structures situated to the north of the gully. The exception to this was WT116. The

water tender was assigned to respond to the Crestwood Park area to provide the units there with a water supply.

As the incident progressed it essentially evolved into two separate incidents. The first being the interface fire and the second being the protection of the structures to the north of the gully. Additional units were requested until at total of nine (9) engines, three (3) trucks, five (5) medic units, four (4) auxiliaries, one (1) water tender, and various other command and control and support units were on scene.

Timeline Synopsis

This summary of the timeline was created by timing with a stop watch the various events as they took place as recorded per the V.E.C.C. recording of the incident. The incident was initiated by a 911 call received from a resident on Parkridge Drive by V.E.C.C. at 16:23:31 hours. The call taker at V.E.C.C. took 2 minutes and 43 seconds to interrogate the caller. This would make the time 16:26:14. Engine 110 went enroute at 16:27:24. Engine 110 arrived on scene in the Crestwood Park area at 16:33:14. The elapsed time from the dispatch of the incident to the arrival of the first unit on scene is 7 minutes even. N.F.P.A. 1710 defines response time as "The time that begins when units are enroute to the emergency incident and ends when units arrive on scene." Using this definition the response time is 5 minutes and 50 seconds. Driving the route in my vehicle, from Station 110 to Crestwood Park, at approximately the same time of day without lights and sirens took approximately 8 minutes and 17 seconds. A second trip to verify this time took approximately 7 minutes and 54 seconds. The differences in the times could be accounted to variations in traffic patterns and traffic light differences.

The officer of E110 requested additional resources from V.E.C.C. within 30 seconds of announcing his arrival and establishing his command. The additional units, Engine 35 and Aux 35 were dispatched to the scene by V.E.C.C. at 16:36:04. Engine 35 and Aux 35 arrived on scene at 16:41:23. An elapsed time of 5 minutes and 19 seconds. Command requested Company 116 and Company 104 at 16:38:20 hours. By the time V.E.C.C. had acknowledged this request, paged the requested units, and the units responded enroute, the time had elapsed to 16:41:59. While this had been happening on V.E.C.C. channel 1, command (E110) had requested an additional full alarm assignment at 16:39:23. Command (E110) assigned T104 to respond to the Parkridge Drive area to protect the residential structures there and Aux 104 to respond to the Crestwood Park area while these units where still enroute. Command (E110) also assigned E116 to the Parkridge Drive area and WT116 to the Crestwood Park area at approximately the same time. These units were also still enroute to the incident when they received these initial assignments. At 16:43:22 ME32 arrived in the Crestwood Park area. No time of dispatch for this unit can be derived from the record. Truck 104 was the first unit to arrive on Parkridge Drive and did so at 16:50:37, the elapsed time from the start of the incident is 24 minutes and 23 seconds. However, the arrival time of T104 from their time of request from command is 12 minutes and 17 seconds.

Engine 116 arrived on Parkridge Drive at approximately 16:51:58, 1 minute and 21 seconds after the arrival of T104. These two units then began structure protection with T104 setting up aerial operations to combat a detached storage structure that had become involved. Engine 116 began stretching hand lines to the rear of residential structures to effect protection of those structures. At approximately 16:52:47, the crews from E110 and M110 make a report to command that there are civilians in the unburned area in front of the flame front. The focus of command then changes temporarily to the protection of those civilians by their removal from in front of the flame front. During this time command has requested from V.E.C.C. the response of the Salt Lake County Sherriff's Office to assist with evacuations and crowd control. This covers approximately the first thirty minutes of the incident.

Complications

A number of factors contributed to the complications involved with combating this incident. The first being the numerous 911 calls made to V.E.C.C. Throughout all of these initial calls only one mention was made of the possibility of structures or vehicles being threatened by the spread of this fire, and then no great emphasis was communicated. There were repeated reports of the fire moving quickly, but at no time were any specifics given to V.E.C.C. about proximity or possible numbers of structures threatened.

A second complication was the limited access to the seat of the fire. Engine 110 had to actually travel further south than the incident was located in order to access it off of Creek Road. This added time to their response. This was necessitated by the physical geographic characteristics of the gully and the reported location of the fire.

The fire load in the gully was another complication. The Salt Lake Valley experienced a wet spring followed by warm and very favorable growing conditions before the weather turned extremely hot. This facilitated the growth of very tall and heavy light fuels in the gully. The extremely hot weather then quickly dried the vegetation, creating an extremely volatile situation.

Another factor that affected the outcome of this fire was the wind and weather conditions. The units initially responding to this fire were dispatched to the Crestwood Park area. As the responding units were arriving and beginning to make their initial attack, the wind direction and strength shifted. Winds blew up shortly after the arrival of E110. This caused the fire to rapidly increase in size and make a run to the north and west. Due to these factors the initial responding units found themselves in the wrong location as the fire made its run towards the residential structures on the north rim of the gully.

The geography of the location once again played at part in complicating matters. After the arrival of E110 and the fire began its run to the north and west the steep incline provided a perfect means to accelerate the spread of the fire. These winds

were a significant factor to the fast moving run that the fire made early on in the incident. This also inhibited direct line of sight between the crews working at the base of the gully and those crews working on Parkridge Drive especially when combined with the smoke conditions and flame heights of 20 to 30 feet. The geography of the location also made a clear overall picture of the situation extremely difficult for such units at T104 and E116 to ascertain from their positions. This made the initial positioning of apparatus and hose lines very difficult for these crews.

Another big distracter for command and the crews was the location of civilians in front of the flame front in the unburned portion of the slope. As a fire can make a run much faster than a human being can travel it was imperative for the crews to remove the civilians from this dangerous position. The geographical conditions were exacerbated by the changing weather conditions.

Finally communications during the incident were very heavy. As a result there were moments of garbled messages and at times there were situations were messages could not be passed either by command or to command.

Injuries

There were no civilian or firefighter injuries or deaths associated with this incident. There were some minor smoke inhalation injuries to a small number of Sheriff's Deputies that were transported to a local hospital, treated and then released.

Lessons Learned

This was a very complicated and frustrating incident for the responding crews and for the citizens of Cottonwood Heights. The location and geography played a major role in the complexity of this event. This area is a very difficult one in which to fight a fire. It has a very limited means of access that can inhibit response. Even though the U.F.A. strives to meet the requirements of N.F.P.A. 1710 due to the physical location of the closest fire station and the limited means of access to this area, a 4 minute response time is physically impossible. Another contributing factor to the rapid fire spread is the fact that the gully is very steep, especially on the north and east sides. The gully is surrounded on the top of its slope by numerous residential structures.

Many of these structures have out buildings or decks that actually overhang the slope and create addition potential fire exposures. This slope also obscured the view of the direction of travel of the flame front and its size. The vegetation in the gully also lends itself to fast moving, hot, large flame fronts. The most obvious solution to this situation is to commit more units to the problem sooner.

The current plan is to have the on-duty battalion chief assign an available unit to respond to the north rim of the gully. While this solution has merit there are other considerations such as unit availability, mutual and automatic aid agreements, and area coverage that will affect the availability and response time of this unit. This will provide for additional tactical flexibility to assist the responding units in situations were V.E.C.C. has not been given enough information to form a complete tactical picture, or wind and weather, or other external factors may affect fire behavior. The area in Little Cottonwood Park also has a limited number of hydrants for water supply. The crews in the area need to be cognizant of this and consider laying their own supply line into the area. Additionally, the use of progressive wildland hose lays in this area is indicated.

However, during the incident in question there was some confusion by the crews responding to the Parkridge Drive area if they were responding to a field fire or structure fire. This has a great impact on the crews from their selection of personnel protective equipment and hose lines, to their strategy and tactics. A means of better communicating this information is indicated.

Communications was a problem. Channel 2 in particular was very congested, not only by this incident but by others that were occurring at other locations in the valley. The channel was restricted to this incident, however incidents that occurred prior to this one being dispatched still had to be cleared. Additionally, with the large numbers of units responding and the large geographic area in question on this fire, having units "stepping" on one another was inevitable. To help remediate this problem a decision was made to divide the incident into north and south divisions and have each division assigned to a tac channel. Also, as the 911 calls were being received by V.E.C.C., a few callers referred to an incident last year where this area had burned and that fire had also "moved fast". A method of records search or past incident history needs to be developed for fire incidents in much the same way as medical incidents currently are. This would at least provide a "trip wire" for the dispatchers and responding crews that this area merits additional attention and or resources. Additionally, the crews need to be encouraged to find areas such as this in their areas and pre-plan them. These pre-plans need to include what additional units should be requested or included in the initial assignment, such at WT116 and/or Wildland units. This is done for target hazard-type occupancies throughout the valley and the same procedure would seem to be indicated for urban interface areas. These pre-plans should then be shared throughout the entire department as it is unknown which units could be drawn into such an event.

The crews that were responding to the Parkridge Drive area voiced concerns by the volume and location of on-lookers. In some instances curious civilians were driving their vehicles to the scene and restricting the relocation of units on the scene as the flame front progressed. It is suggested that civilians not place themselves in harms way and impede the reallocation of resources.

Lastly, it must be noted that civilian involvement and cooperation are key to the reduction of risk for this type of incident. There is a responsibility on the part of property owners to reduce the risk of fire prior to an incident occurring. This can be accomplished by the reduction of fuels and the inclusion of defensible space between undeveloped areas and those areas occupied by structures and critical infrastructure. In the area of Crestwood Park and Parkridge Drive in particular this can be accomplished by the reduction of fuels in the sloping areas of the gully and removal of structures on or near the gully slope. The removal of these structures and fuels provides the defensible space necessary to prevent the rapid spread of the flame front in the event of an urban interface fire. Landscaping can also be modified to help prevent the spread of fire. There are flame resistant types of plants that can be used in areas such as this to create defensible space. The fire department must work with the citizens prior to fire incidents to create situations and environments that provide for the best possibility of a successful outcome. However, it is recommended that any mitigation efforts be incorporated into an overall master plan of the area.

Summary

In conclusion, it must be stated that this was a seemingly simple fire that turned out to be very complex. The gully in the Crestwood Park area provides very unique challenges that call for unique tactical solutions. These unique challenges were complicated early on by the rapidly deteriorating weather and wind conditions. The information that was being relayed to V.E.C.C. by the more than thirty 911 calls all painted a picture of a grass fire in the bottom of the gully. As a result all of the initial units were sent to the bottom of the gully to attack the seat of the fire. In retrospect units should have been dispatched to the north rim of the gully to be proactive to changing fire conditions and to act as a safety look out for those units operating in the bottom of the gully.